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REPORT

—ON—

The Prevention of Cholera,

—BY—

J. H. RAYMOND, M. D.,

Commissioner of Health

OF THE CITY OF BROOKLYN,

—TO THE—

Conference of State and Municipal Boards of Health,

—AT—

WASHINGTON, D. C.,

December 10, 1884.

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A conference of State and Municipal Boards of Health, was held in Washington, D. C., December 10, to consider the subject of Cholera, with reference to its threatened appearance in this country in 1885, and to adopt measures to prevent its entrance, if possible; or should these be unsuccessful, to reduce its ravages to the minimum. Health Officers were requested to present reports stating what had been done in their respective localities to prepare for its probable advent. In response thereto the following report was prepared and read at the Conference.

N. B.—In an Addendum, numbered pages 10a and 10b, will be found the propositions adopted by the Conference.

DEPARTMENT OF HEALTH.

BROOKLYN, Dec. 4th, 1884.

To the Representatives of State and Municipal Boards of Health:

GENTLEMEN:—In accordance with your request I beg herewith to submit a report of the work of the Department of Health of the city of Brooklyn with reference to placing the city in a proper condition to meet the probable advent of cholera the coming summer.

WATER SUPPLY.

Two years ago there existed within the city of Brooklyn three hundred and sixteen pump-wells. These were the ordinary surface wells dug to a sufficient distance in the earth to reach water, this distance varying from fifteen to one hundred feet. An analysis of the water of these wells showed that of this whole number but seventeen furnished water fit for human consumption; of the entire number three hundred and seven have, upon the recommendation of this Department, been filled by order of the Common Council, leaving but nine in the city. And these it is to be hoped the Common Council will close during the present winter; if not, should cholera come, they will be closed by this department. Having thus done away with a possible agent in the spread of cholera, namely, the impure water furnished by surface wells, the attention of the Department was next drawn to the sources of the Ridgewood water supply, the only other water supply of the city, and investigation is now being made by representatives of the Departments of Health and City Works, which will show to what extent, if any, this water supply is imperilled, and immediate steps will be taken to remove all possible sources of contamination. This being done it may be safely assumed that Brooklyn need have no anxiety for the spread of cholera through its water supply.

PONDS.

Cholera has appeared in Brooklyn as an epidemic three times since the year 1848. The last epidemic occurred in the year 1866, and resulted in the death of 517 inhabitants. The population of the city at that time was three hundred and thirteen thousand, about one-half its population at the present time. The disease appeared most prevalently and most fatally in the Twelfth Ward. This section of the city is one which is, to a great extent, composed of filled in ground, being originally covered by salt water, with marshes and islands interspersed. In the improvement of this part of the city, streets have been constructed, leaving between them ponds of water, which being stagnant, became offensive. This was the condition of things in 1866. Why the disease attacked this por-

tion of the city more than any other it is difficult now to say; but I find in looking over the records that special mention is made of a pump situated upon Van Brunt street, which was looked upon by the health officials at that time as being largely instrumental in the spread of the disease in that section of the city. There is no doubt about one thing, whatever else may be said, and that is, that this section of the city was at that time water-soaked, and thus probably was adapted to the propagation of any germs that found a lodgment there. Since that period very many of these ponds have received from time to time a certain amount of filling, but not enough to completely obliterate them. Last summer (1884) special effort was made to fill these ponds, and also all others in the city. Fifty-five ponds have thus been filled at an expense of \$26,721. It is a source of gratification to me that all the filling of lots during this past summer by the Department of Health, has been with clean material entirely free from garbage, and in every way unobjectionable.

At the present time there exists in this section of the city but one pond, and measures have been taken which will before the advent of spring, cause this one also to be completely filled.

The same action which has been taken in the Twelfth Ward has been followed throughout the city generally, so that we have to-day in the city of Brooklyn but six ponds which will be likely in any way to serve as abettors in the propagation of the disease, should it come, and action has been taken in reference to these which will result in their abatement during the present winter.

PRIVY VAULTS.

The first census, so far as I am aware, that was ever made of the privy vaults of Brooklyn was made at the request of the Department of Health by the Police of the city in the year 1878. At that time there were twenty-five thousand privy vaults in the city. Of this number fourteen thousand were known as not water tight; that is built with stone as a rule loosely placed together, without cement, and with no attempt to prevent soil saturation. In addition to these there were eleven thousand vaults which were nominally water tight, and were constructed in accordance with the Ordinances; that is, they were built of brick and cement and were connected with the sewer. For several years this department has been earnestly striving to eradicate from the city every privy vault which could be eradicated, and to-day every one which is upon a sewered street which is not legally constructed, is under orders for its abolition. During the past six years several thousand have been abolished, just how many it is impossible to say at the present time as the figures are now being made up. We have up to this time been unable to proceed against the legally constructed privy vaults, eleven thousand in number. Attempt have been made by the department to have the Ordinances so

altered as to entirely do away with all privy vaults, when located upon lots adjacent to existing sewers. These efforts have thus far been unsuccessful. A communication is now before the Common Council of this city, calling their attention to the danger connected with vaults of this kind, permitting, as they do, human excrement to accumulate and decompose, and to serve as a *nidus* for the germs of disease, and requesting the repeal of the existing Ordinance and its substitution by one which will not only prevent the further construction of these vaults, but will require the abolition of those now existing; and also requiring that where privy vaults are built upon lots in streets where sewers do not exist, such vaults shall be built so as to prevent all possibility either of the contamination of the soil or of the porous material of which the vault is built. It may be said, in passing, that in new houses no privy vaults of any kind are permitted where sewers exist, only water closets are allowed.*

The communication to the Common Council in reference to this matter is hereto appended, and in this will be found in detail the reasons for this recommendation. Special arrangements have already been made with the Police Department by which all the privy vaults of the city will be inspected at least once a month, and immediate steps taken by the Health Department to abate any nuisances that may be found. If the desired change above referred to is made in the Ordinances, and all vaults abolished which will thus be rendered illegal, the number remaining will be so small as to permit an examination as often as twice or even three times each month. These reports of the condition of the vaults will be followed up by disinfecting officers from the department, who will attend to the disinfecting of the contents of these vaults. The officers of the department will thus be enabled to disinfect and keep disinfected the contents of all vaults.

NIGHT SOIL.

Under the present arrangements night soil is collected from the vaults in a manner which is free from objection.

The removal is effected only during daylight, when any nuisances connected therewith could easily be seen, and after thorough disinfection of the material; the apparatus employed is that which is known as "Odorless," so that there is no improvement which could be suggested in the method by which night soil is now removed from the vaults of this city. For the past few years, since the use of the dock at the Wallabout was abandoned for the removal of night-soil and dead animals, the night-soil which has been collected in Brooklyn, has been removed to the country and deposited upon farms, and utilized as a fertilizer. Before permission was given to the scavengers to thus dispose of

* RULE 17. ON STREETS THAT ARE SEWERED.—All buildings that are located upon a street in which a public sewer exists, must be provided with water closets, either in the house or yard; privy vaults will not be permitted when a public sewer exists in the street.

the night-soil, it was required of them that they produce the permission of the owner of the farm, and also a permit from the Board of Health of the town in which the farm was situated. It was believed that these requirements would prevent the establishment of any nuisances upon neighboring towns. This system has now been in vogue for three years and the amount of night-soil which has been thus disposed of is not far from five hundred thousand cubic feet. Should cholera come it would probably be necessary to otherwise dispose of this material, and arrangements would have to be made to carry it to sea.

SEWERS.

The condition of the sewers of Brooklyn as to cleanliness was probably never better than it is at the present time. The Commissioner of City Works, through his competent Superintendent of Sewers, has given this matter great attention, and I am persuaded that the reduction in zymotic diseases which has occurred in Brooklyn during recent years is in no slight degree due to this condition of the sewers. Special attention will be given to the sewers of those localities in which cholera may appear to see that they are kept cleansed and well flushed.

MEDICAL INSPECTION.

The residences of the Medical Inspectors of the Health Department, twelve in number, will be connected by telephone with the Health Office, so that all reports of cases which are received can be at once communicated to them and receive prompt attention. In addition to the regular corps of Medical Inspectors, arrangements have been made by which a special corps of physicians will be appointed, whose duty it shall be to visit regularly all tenement houses, a list of which is on file in this office, and all localities where people are likely to be without medical assistance, with the object in view of administering remedies for the premonitory diarrhoea, and disinfecting infected clothing and fumigating infected premises. The methods of disinfection and fumigation at present practiced are those adopted by the National Board of Health in 1879, and recommended by our State Board of Health. Sulphur, sulphate of zinc, common salt and copperas are the principal agents employed; in the present aspect of sanitary science the bichloride of mercury might with advantage be added to this list, as has already been done by some Boards of Health, notably that of Boston. The necessity for a thorough reexamination of disinfection and disinfectants was duly appreciated by the American Public Health Association at its recent meeting in St. Louis, and a committee which was then appointed, is now at work upon this important subject.

HOSPITALS.

It is difficult, previous to the advent of the disease, to locate hospitals, inasmuch as such buildings should be situated in the immediate locality affected, it having been abundantly proved that the removal of persons sick with cholera to a long distance from their homes is very injurious and has, in no small number of cases, contributed to a fatal termination. It may also be questioned whether a better plan than a general establishment of hospitals would not be to vacate the infected houses; that is, to leave within them only the sick, and to require those that are well to seek refuge elsewhere,* for a house which becomes infected by the sick person is, as is well known, a house that will infect those that are well. It will of course be necessary to have some hospital provision made for persons who are unable, through poverty or other cause, to obtain the necessary nursing and care at their own homes; but I question very much whether a general removal of infected persons from their homes to hospitals is a wise measure.

In this connection permit me to call attention to the remarkable results reported by Edwin Chadwick, Esq., C.B., in his address entitled, "Precaution against Cholera," and reproduced in the Appendix to this report. In the last epidemic of cholera which fell upon Limehouse, he says that the children of the pauper half-time school were distinguished by their entire exemption from any choleraic attack, and attributes this exemption to careful head-to-foot washing with tepid water. He gives also other striking instances of the comparative immunity which personal cleanliness confers on individuals, not only in times of epidemics but under ordinary circumstances. His observations are well worthy of careful perusal, and of adoption, not only by the managers of public institutions but also by individuals.

ITALIAN QUARTERS.

Special attention has been given to the quarters occupied by Italians, of which people there are in Brooklyn, upon the lowest estimate, ten thousand. Few of these can speak English, and to accomplish anything in the way of sanitary improvement among them requires the constant efforts of one of their own nation. Such an inspector has been engaged in this duty for several months, and will be continued in the work. The nature of the employment of this portion of our population is such as to bring them constantly in contact with rags, bones, and all manner of filth which, unless watched, they bring to their homes and accumulate in large quantities.

The accumulation of rags is one which should be kept under the surveillance of health departments and an ordi-

*In this connection see "Precautions against Cholera," an address delivered in August, 1884, by Edwin Chadwick, Esq. C. B., and especially the extracts given in the appendix to this report.

nance has been asked for in Brooklyn to prohibit the storing of them except in such localities as are approved.

LODGING HOUSES.

Brooklyn has, at the present time, nine cheap lodging houses, containing in all five hundred and thirty two beds. In these houses congregate a large portion of the poor floating population of the city. Coming from vessels lying at the dock, or from neighboring cities, some are quite regular in their attendance, while others come to-night and are gone to-morrow. These houses have been thoroughly examined from cellar to attic, and where defects of sewerage or ventilation have been found, they have been corrected. The disinfecting officers are at work, disinfecting and fumigating them throughout, and the sanitary inspectors have been directed to visit them frequently and keep close watch upon them. The proprietors have been summoned to the Health office, and instructions have been issued to them which will result in keeping these buildings in good condition, and in making us aware of the existence of any suspicious sickness.

LAUNDRIES.

The number of cases of cholera which have occurred from washing infected clothing, suggests that precautions should be taken in every public laundry. These establishments receive clothing from unknown sources and are the means of spreading the disease. The idea has occurred to me that if proper disinfecting solutions should be kept upon these premises, and the proprietors be required to soak all clothing that was received in this solution, immediately upon its receipt, before washing, the danger of the spread of infection from this source might be avoided. Or some method of applying dry heat of sufficient intensity might be deemed more efficacious, or both combined.

FOOD SUPPLY.

It is conceded that the food supply during the times of a cholera epidemic is an important agent in the predisposition of individuals to attacks of the disease. Koch, if I mistake not, calls attention to the greater liability of contracting the disease, when from any cause the alimentary canal is in an abnormal condition. Whether this is true or not we know that when the body is properly nourished, individuals are more able to withstand attacks of disease and even to escape them, than when, from any cause, they are in a debilitated condition. With this in mind, special attention has been given to the food supply of Brooklyn during the past summer. My experience leads me to the conclusion that a very much greater proportion of diseased animals is slaughtered and the meat of the same put upon the market than is commonly believed. During the past Summer inspectors have been stationed at the slaughter houses

with reference to this detection of impure meat, and they have thus been enabled to discover and condemn meat which would otherwise have found its way into the market. In one of our large cities, at a not very distant date, scores of carcasses of immature veal were exposed for sale in the public market, and it was the opinion of men competent to decide that some of these calves had come into the world only a day or two before, and that others had been born dead. The effect of such meat upon the health of those unfortunate enough to eat it can readily be surmised. And here let me say that, in my judgment, no inspection of meat can be of much value unless it occur at the slaughter-house, and before the viscera have been removed. Many cases of tuberculosis and of contagious pleuro-pneumonia have been detected by the inspectors who were able to interrogate the lungs before they were removed from the animal, which would have passed a most rigid inspection had an examination of the carcass alone been relied upon. No statistics, so far as I am aware, have ever been collected in this country of the amount of tuberculosis in our cattle. In the abattoir of Munich in 1875, out of 55,882 head of cattle, 704 were tuberculous. It has been estimated that nearly six per thousand of the cattle of Bavaria are thus affected; and Fleming assumes that five per cent. of the cattle of Great Britain are affected with tuberculosis. The milk supply of large cities is also one to be specially kept under observation during epidemics; and this not only because there is danger of milk from diseased cows finding its way into the market, but because a large amount of milk furnished in our cities is adulterated with more or less water.

This water is, as a rule, from the ordinary water supply of the farm or of the stable, and is liable to be impure, and, just as infected water may communicate disease to those who drink it, just so may milk, adulterated with infected water, be the means of conveying disease. The adulteration of milk with water, therefore, is to be looked upon as something more than an ordinary adulteration affecting the pocket of the consumer, and something more even than one depriving the growing child, depending upon it for its support, of a large portion of its nutrition; it may be a means of conveying cholera as it has time and again communicated typhoid fever. Courts, therefore, when complaints are made before them of selling milk adulterated with water, should have their attention specially directed to this danger, and asked to impose the heaviest penalties which the law allows.

Attention to the sanitary condition of cow stables is also very important. If the urine and excrement are permitted to accumulate and putrefy, either within the stable or its immediate vicinity, the milk will almost certainly be affected. Every one is familiar with the remarkable absorptive power of milk, and the facility with which it undergoes decomposition. The atmosphere of a filthy cow stable, laden as it is with putrefactive germs, cannot but act deleteriously upon the milk exposed therein.

To further carry out the object of protecting the milk supply, a critical examination by qualified veterinarians has been conducted, for the past six months, into the condition of the milch cows of the city, and measures have been put into execution with reference to the eradication of tuberculosis and contagious pleuro-pneumonia, believing that milk from animals thus affected is highly injurious, and that the continuance of such animals in a herd casts suspicion on all the milk produced. Arrangements are now being perfected for the establishment of a quarantine, to which will be sent all affected cows, where they will be kept under the supervision of the health authorities until it is deemed proper for them to return to the herds from which they came.

It seems unnecessary to call attention to the necessity for special effort in guarding the public against immature or unripe vegetables and fruit, in times of cholera ; this is a work which will suggest itself to every sanitary officer, and therefore needs but an allusion here.

QUARANTINE.

Brooklyn, in common with other cities, must depend in great measure for its protection from cholera upon the Quarantine Authorities. The present arrangement by which our water front is constantly patrolled by the police renders it almost impossible for a vessel from an infected locality to come to our docks and unload its cargo without first obtaining the permit of the Health Officer of the Port. It is of course among the possibilities that infected material may reach the city in trunks or packages which have found their way into our country through some other port than the Port of New York ; but I feel that if we can exclude from Brooklyn all cases and infected goods that find their way by ship to the Port of New York, we will be able to keep the disease from obtaining a foothold in our city. The people of Brooklyn fully appreciate the difficulties under which the present Health Officer, Dr. William M. Smith, labors, and take this opportunity to express that appreciation and to commend his watchfulness and painstaking care ; and we assure him that any and every effort which he may make, however arbitrary, with the object of protecting the two million residents of New York and Brooklyn, will be sustained.

We would also importune the Legislature of the State of New York to withhold no means needed to uphold the Health Officer in perfecting the Quarantine Station and its appliances in the Harbor of New York.

I beg leave to submit to the Conference for its consideration and ratification, if approved, the following propositions :

First.—That all surface wells should be closed at the earliest possible moment, and that great care should be

taken that the water supply of all cities, towns and villages shall be of undoubted purity.

Second.—That all privy vaults should be abolished wherever water-closets can be supplied, and that wherever the existence of such vaults is necessary that they should be rendered water-tight in such a manner as to prevent the saturation, not only of the ground surrounding them, but also of the materials of which they are built, and that the contents of such vaults should be kept constantly disinfected, and removed to a proper place at frequent intervals.

Third.—That all stagnant ponds should be disinfected, and when possible the water removed by drainage or pumping, and the further accumulation prevented by filling with fresh earth or other material free from garbage or other filth.

Fourth.—That great care should be exercised to keep at all times clear and free from obstruction all sewers, into which passes the refuse from dwellings, factories and other buildings, and that such examinations should be made as will detect imperfect plumbing in all buildings and the defects immediately corrected.

Fifth.—That extraordinary care should be exercised in reference to all tenement houses, lodging-houses, and in general, all places where large numbers of human beings congregate, that no accumulation of garbage or other filth be permitted in cellars or yards, and that frequent and thorough cleaning and whitewashing of such structures be required ; and that householders should frequently and thoroughly examine their yards, cellars, closets and other out of the way places, to see that no filth of any kind has been deposited there.

Sixth.—That the food supply be vigorously watched to exclude from the market all unwholesome meat; all milk adulterated or from diseased animals; and all unripe fruits and vegetables ; and that cow-stables be kept, at all times, clean, well whitewashed and free from all excremental accumulations.

Seventh.—That all garbage, kitchen and household refuse should be promptly removed from dwellings, stores and other buildings to a proper place where it may be destroyed by fire or otherwise disposed of in such manner as to occasion no nuisance.

Eighth.—That such material should never be used in the filling of lots or disposed of by throwing the same in streets or vacant property where it may decompose and exhale offensive and deleterious gases.

Ninth.—That in view of the practical results reported by that eminent sanitarian, Edwin Chadwick, Esq., C. B., the

authorities of all public institutions, and individuals as well, have their attention drawn to the great importance of the personal cleanliness of the persons committed to their charge, as one of the most efficient means of warding off an attack of cholera, and of reducing its force when once it has appeared.

Tenth.—That all authorities of states, cities or villages be urged to adopt measures which will result in the amelioration of all conditions such as have been referred to in the foregoing propositions, with the warning that in the opinion of this conference such conditions if permitted to continue will greatly promote the spread of cholera when it comes, and with the assurance that if requisite measures are promptly taken to remove them, the disease will be less likely to attack a community so prepared, and if attacked such a community will be better able to cope with the disease and to reduce its ravages to a minimum.

CONCLUSION.

In concluding this report, permit me to direct attention to the importance of this conference which is now assembled in convention. In my judgment it is the most important, from a sanitary standpoint, which has ever convened in the United States, and to its deliberations the attention of the whole country is directed. From it will be expected, in concise and available form, recommendations by which communities may prepare themselves for the threatened invasion, and methods for its control when once it has appeared. It behooves us, therefore, to proceed with great caution, and to consider carefully and thoroughly all suggestions which may be made, and if need be to assemble again at an early date to adopt what in the wisdom of this conference may seem best, so that when our labors are completed we may issue to the public such a plan as shall meet its wants and be recognized by medical and other men of science as having its foundation in the most advanced knowledge now attainable, and competent to meet the ends for which it was prepared.

Respectfully,

J. H. RAYMOND,

Commissioner of Health.

ADDENDUM.

THE ten propositions printed on pages 8 to 10 of this pamphlet were, on motion, referred by the Conference to the proper Committee, and by them carefully considered. This Committee reported them back, with amendments, and the following eleven propositions were unanimously adopted by the conference :

First.—That all surface wells should be closed at the earliest possible moment, and that great care should be taken that the water supply of all cities, towns and villages shall be of undoubted purity.

Second.—That all privy-vaults should be abolished wherever waterclosets can be supplied, and that wherever the existence of such vaults is necessary that they should be rendered water-tight in such a manner as to prevent the saturation, not only of the ground surrounding them, but also of the materials of which they are built, and that the contents of such vaults should be kept constantly disinfected, and removed to a proper place at frequent intervals.

Third.—That all stagnant ponds, when practicable, should be disinfected, and when possible the water removed by drainage or pumping, and the further accumulation prevented by filling with fresh earth, or other material free from garbage or other filth.

Fourth.—That great care should be exercised to keep at all times clear and free from obstruction all sewers, into which passes the refuse from dwellings, factories and other buildings, and that such examinations should be made as will detect imperfect plumbing in all buildings and the defects immediately corrected. In this connection special attention is directed to the necessity for the thorough ventilation of all soil and waste-pipes, and to the dangers connected with untrapped and unflushed soil-waste and overflow-pipes.

Fifth.—That extraordinary care should be exercised in reference to all tenement houses, lodging houses, and in general, all places where large numbers of human beings congregate, that no accumulation of garbage or other filth be permitted in cellars or yards, and that frequent and thorough cleaning and whitewashing of such structures be required ; and that householders should frequently and thoroughly examine their yards, cellars, closets and other out of the way places, to see that no filth of any kind has been deposited there.

Sixth.—That the food supply be vigorously watched to exclude from the market all unwholesome meat; all milk adulterated or from diseased animals; and all unripe fruits and vegetables; and that cow stables be kept, at all times, clean, well whitewashed and free from all excremental accumulations.

Seventh.—That all garbage, kitchen and household refuse should be promptly removed from dwellings, stores and other buildings to a proper place, where it may be destroyed by fire or otherwise disposed of in such manner as to occasion no nuisance.

Eighth.—That such material should never be used in the filling of lots or disposed of by throwing the same in streets or vacant property where it may decompose and exhale offensive and deleterious gases.

Ninth.—That the attention of the authorities of all institutions, both public and private, and of individuals as well, be drawn to the great importance of maintaining a habit of personal cleanliness in the persons under their charge, as being one of the most efficient means of warding off an attack of cholera, or if it has once appeared, of greatly reducing its virulence and fatality.

Tenth.—Should the cholera appear in any place in this country, the health authorities of the place should have immediate notice of the first cases in order that prompt action may be taken for complete isolation and disinfection.

Eleventh.—That all authorities of states, cities or villages be urged to adopt measures which will result in the amelioration of all conditions such as have been referred to in the foregoing propositions, with the warning that, in the opinion of this conference such conditions, if permitted to continue, will greatly promote the spread of cholera when it comes, and with the assurance that, if requisite measures are promptly taken to remove them, the disease will be less likely to attack a community so prepared, and if attacked, such a community will be better able to cope with the disease and to reduce its ravages to a minimum.

APPENDIX.

EXTRACT FROM THE MINUTES OF THE BROOKLYN COMMON COUNCIL,

November 24th, 1884.

From Department of Health :

DEPARTMENT OF HEALTH, }
November 24th, 1884. }

To the Honorable the Common Council :

GENTLEMEN :

The experience of this department concerning the privy-vaults, as existing in this city, is such that they can only be regarded as a constant danger to the public health, and more especially are they to be feared in times of threatening pestilence. It appears to the Commissioner that the time has now fully come when vaults of every description should be abolished in localities where the streets are sewered, in order that excremental matter may be at once carried away from human habitations, rather than to longer permit its accumulation and decomposition so near to the dwelling and sleeping rooms of citizens as that the air of these rooms can be rendered impure and a source of danger to health.

With this is forwarded a circular, in which the reasons for this opinion are more fully set forth, and to which is asked your careful attention and consideration.

CIRCULAR OF INFORMATION.

DEPARTMENT OF HEALTH OF THE CITY OF BROOKLYN, }
Office of the Commissioner, }
Municipal Department Building. }

In consequence of frequent inquiries made at this Department, concerning the best sanitary disposal to be made of night-soil within the city, the following circular of information has been drawn up, giving the experience of this and other Health Offices as to the safest methods of getting rid of human waste. That which follows in quotation marks is essentially a reprint from an article prepared by Dr. J. H. Raymond, Commissioner of Health, for the American Public Health Association, at its meeting held at Detroit, in 1883 :

“ Privies are of four kinds : First, The simple excavation in the earth, either with or without sides of plank or loose stones, so constructed as to facilitate the soaking away into the surrounding soil of the liquid portion of the filth, and thus avoiding the too frequent demands upon the purse of the owner in its emptying. The earth about such vaults soon becomes saturated with the excrementitious matter deposited in them, and these impurities are by the ‘ ground

water' carried farther and farther into the soil, there to decompose and give off pernicious gases ; or to find their way by percolation into the neighboring well, to pollute the water therein contained. It has been frequently observed that when the cobble-stone privy-vault is being emptied the excrement which was forced into the interstices between the stones when the vault was full, oozes back again into the vault, thus showing that this ground soakage is not an imaginary evil.

" It is quite a prevalent idea that such vaults are unobjectionable, because it is said that earth is a disinfectant, and that such vaults are practically earth-closets. It is hardly necessary to say that this claim cannot be sustained. The analogy between the yard-vault and the earth-closet would be more exact if in the earth-closet the same earth was used over and over again. This we know cannot be done, as when it is once saturated its deodorizing power is exhausted.

" Another kind of vault is what is commonly denominated the 'water-tight' vault. This is similar to the one just described, save that it is constructed on sides and bottom with brick laid in cement. This method of construction is adopted to prevent the ground soakage referred to. But another evil arises which is equally objectionable. The bricks being porous, absorb the fecal matter, and when these vaults have been in use a few months they become permanently polluted, and no amount of cleaning can deodorize them. If it should chance that infected discharges, as from a typhoid or choleraic patient, formed a part of their contents, what is there to prevent the spongy sides of these vaults becoming infecting centres for the propagation of these diseases ?

" A third kind of vault is one which, constructed like that last mentioned, is, in addition, connected with the sewer. This sewer connection is of little use, for in most cities the use of water is restricted, and in Brooklyn none of the waste water from the dwelling is permitted to discharge into the vault for fear that stopcocks will be opened and water allowed to run to waste in attempts to wash out the vault when it becomes offensive. The only water, then, which finds its way into such vaults is the rain water from the roof of the building, which is discharged into them, by the leaders. In wet seasons even this is not sufficient to flush them properly, and in the summer months, when for many weeks but little rain falls, the excrement is not carried into the sewers, but accumulates as in the other kind of vaults. Indeed, this rain water is rather a disadvantage than otherwise; not being sufficiently abundant to flush the vault, it yet supplies moisture, one of the conditions necessary to the putrefaction of the organic material contained in the vault.

" A fourth kind of vault is represented by the school-house sink. Being made of metal and furnished with appliances to fill it with water and empty it at pleasure, it would seem to have the necessary requisites for the purposes

to which it is applied, without creating a nuisance. As commonly constructed, however, it is certainly objectionable. It is the practice to set the metal tank low in the ground, and then build upon it several rows of brick laid in cement. This is practically a brick vault with metal bottom, and is open to the objections made against the so-called 'water-tight' vault already described.

"If these 'sinks' are to be used, they should be set even with the ground, without masonwork of any kind to act as an absorbing surface. The freezing, to which these vaults are liable, can be provided against by inclosing them in well-built structures, instead of the ordinary privy-house. The seats should be hung on hinges so as to permit of easy access to all the interior. Much will depend upon the care bestowed upon such a vault whether it will or will not become offensive. It needs daily emptying, cleansing, and refilling with clean water, and unless intelligently and faithfully watched, will in the end become a nuisance.

"It will readily be seen from these considerations that the first three kinds of vaults should be unqualifiedly condemned as being unsanitary in every sense, and that the fourth kind should only be used when it is properly constructed, and when there is no doubt of its receiving an intelligent supervision, without which, in fact, all contrivances for the same object will inevitably become sources of offense. In case the yard-vaults are abolished, to be substituted by water-closets, great care should be taken to see that their filthy contents are totally removed before they are filled with earth, as it not unfrequently happens that in the erection of new buildings or of extensions to old ones, the site of the former privy-vault becomes the site of the new structure. It is a mistake to suppose that the earth which is used in filling such a vault will disinfect, deodorize and absorb the excrement.

"In an instance that has come under my personal observation, a vault which had been thus filled eleven years before was again opened, and its contents were found to be preserved so perfectly that no one could have told by either the sense of smell or sight that it had ever been out of use.

"The water-closet is designed to supersede the vault, and there is, in my opinion, no location or condition in which it cannot do so with great advantage to the public health. It receives the excrement at the moment of its discharge from the body and permits its passage at once into the sewer, instead of retaining it close to dwellings for an indefinite period, as does the yard-vault. Aside from the exhalation of offensive odors which is thus prevented, this rapid disposal of the human waste is an important matter in preventing the spread of those diseases, notably typhoid fever, in which the recent discharges are regarded as comparatively non-infecting, but of which the virulence increases as time passes, so that the retention of such waste in the vault greatly increases the chances of propagation. We often hear objections to the abolition of the yard-vault

from those who have been accustomed to its use, on the ground that any structure designed for this purpose should be outside the dwelling, and such persons seem to think that nothing will accomplish this but the vault. Experience has shown that water-closets can be placed in yards without difficulty, provided proper precautions are taken to prevent freezing."

It is the unanimous opinion of sanitary authorities that privy-vaults and cesspools in yards, with their putrefying contents, are the principal agents in the development and spread of zymotic diseases.

In order to carry into effect the foregoing proposed action, the Commissioner requests your Honorable Body to unite with him in the repeal of Sanitary Ordinance, section 177, which reads as follows :

"SECTION 177. That all cesspools or privy vaults shall be water-tight, and when on lots adjacent to sewers shall be connected with the same, in the manner required by the regulations of the Board of City Works,"

and in the adoption, in its place, of the following new section, namely:

SECTION 177. That no privy vault, cistern, cesspool or other excavation to be used for the reception of liquid waste drainage, excrement or sewage shall be built, erected or constructed in connection with any building, or upon any premises situated upon, or adjoining any sewer'd street, avenue or place ; and no such vault, cistern, cesspool or excavation, heretofore constructed or used upon any premises so situated shall be further used for said purpose without a permit from the Department of Health. All such premises shall be adequately provided with proper water-closets and connected with the sewer in such manner as to carry immediately away all liquid waste, excrement and drainage therefrom. And no privy-vault, cistern or cesspool shall be constructed or used upon any unsewered street unless the said vault, cistern or cesspool shall be made and kept water-tight in the manner and form approved by the Department of Health.*

Very respectfully,
R. M. WYCKOFF,
Secretary.

Extracts from "Precaution against Cholera," an address by Edwin Chadwick, C. B., before the Association of Pub-

* No privy-vault, sink, cistern or cesspool shall hereafter be made or rebuilt in the city of Brooklyn, within twenty feet of any dwelling or factory, without a special permit in writing from this Board. All vaults, sinks, cisterns and cesspools shall be made and kept water-tight. This must be done in the following manner: The inner four inches of the bottom and sides must be of hard brick soaked in tar, or dipped and laid in hot roofing cement; if tar-soaked bricks are used, the inner surface of the vault, cesspool, etc., must in all cases be covered over with roofing cement, applied hot.

lic Sanitary Inspectors, at 1 Adams street, Adelphi, Monday, Aug. 11, 1884 :

“ The proved secret of cholera prevention is cleansing, keeping clean, pure water, drainage, looking after all epidemic localities, getting the people out of them. We found in old times that not many yards separated deadly spots from safe ones. For treatment, house-to-house visitors to look after premonitory diarrhoea, and one of the most essential provisions is some place for treating cases as close as possible to the attacked house. Removal of a collapsed or recovering case to a distance means death, and the best thing to do, whenever it can be done, is to remove the unattacked out of the house and to keep the patient at home. The house to be thoroughly cleansed before being again occupied. Generally a fortnight’s airing and lime-washing is enough.”

“ But whilst much preventive service may be effected by cleansing of places, very extensive prevention may be effected by active measures for the cleansing of persons. At the last epidemic visitation of cholera, which fell severely upon Limehouse, the children of the pauper half-time school there were distinguished by their entire exemption from any choleraic attack. The distinction was due to the careful head-to-foot washing with tepid water. The like distinction of immunity was presented in other half-time district schools in the metropolis. Indeed, we had experiences of its efficiency in ordinary times, which enables me to present it as a factor of at least one-third in sanitation. Thus, in a children’s institution, where the death-rate was twelve in a thousand, it was pervaded by sewer gases. These were cleaned away, when the death-rate was reduced by one-third. Then followed provision for regular daily head-to-foot ablution, when the death-rate was reduced by another third. The experience is similar with the washed populations of prisons. Sewer gas got into the Pentonville prison and the cholera got in with it, but the other well situated and well drained prisons, with their well washed populations, presented examples of entire immunity from the epidemic, as they do now from the ordinary epidemics which ravage the outside populations. Attention to the principle may be commended to you for your personal protection during your service. Nurses trained on Miss Nightingale’s principle, who devote themselves to the specialty of nursing in the most infectious cases, those of scarlatina, give themselves head to foot ablutions with tepid water twice a day, and give themselves a daily change of clothes, and with attention to ventilation in the patient’s bedroom, and to other precepts of Miss Nightingale on nursing, secure complete protection to others as well as to themselves. Health officers who have gone without harm through the most dire plagues declared to the Academy of Medicine of France that they owed their security to the double head-to-foot washing with warm water. It is satisfactory, amidst the low retrograde sanitary administration,

and the great loss of life occasioned by it in France, to produce a valuable sanitary improvement from thence. The Colonel of an infantry regiment, Colonel Lewis, has introduced a method by which he gives a superior cleansing with tepid water at a tenth of a penny per head, per man. The man undresses, steps into a tray of tepid water, and after being wetted with a spray, soaps himself thoroughly, when, with a two-handed pump, a powerful spray of tepid water washes him from head to foot. Perhaps there is a double soaping. This is really a most valuable sanitary invention. The work is done better with five gallons of water, as against eighty of the bath, and in less than five minutes of time instead of twenty. In Germany they are advancing upon it in rapidity by arrangements of recesses, in rows, in which men enter in squads, and are subjected to simultaneous douches of tepid water. In fact, the cleansing by the jet has been introduced into Australia for bleaching the fleeces of sheep. They tumble the sheep into tanks of warm soapsuds. They are taken out and a powerful jet of warmed water is directed upon them, when the bleaching is effected, which reduces the weight of the fleece by one-third, at an expense of twopence each.

Apparatus on the principle stated ought to be attached to schools, for relief from the foul atmosphere of filthy-skinned children, which generates the eruptive diseases, and is particularly needed for the poorer classes of the single-chambered families, who have no convenience for the process. It should be stated, as being proved, that a washed pig puts on a fourth more flesh with the same amount of food that is consumed by an unwashed pig. Irish cottiers are beginning to find out this economy, and are presenting their pigs as pinks of cleanliness. It is to be hoped that in time they will find out this economy for their children. Apparatus of the sort ought to be provided by manufacturers for the augmentation of the force of their work-people. The foremost direction of sanitary administrative force might well be given to the general application of the principle of washing with tepid water by the jet as a most effective preventive factor, on which a proclamation may be issued and promulgated from the pulpit on the text, 'wash and be clean,' as a defense against the coming pestilence, as well as against those we have with us."

"The extension of large hospital accommodation is being called for as a means of providing for the coming disease. In our Metropolitan Sanitary commission, we made careful inquiry, as I have stated, as to what did do and what did not do on previous visitations. On our course we found that transmission to the hospitals did not do; that in the advanced stages the mere act of lifting for removal was fatal, and that sending the patients to the hospital was, in a very large proportion of cases, sending them to increased danger and to death, and, with all the defects of the bad homes and their surroundings, it was the safest course, if were a better chance to let them remain there.

We therefore rejected positively the preparation of hospitals for them, and relied mainly upon our policy of the preventive treatment of the locality, and house-to house visitation and treatment of the premonitory symptoms. Our opinion as to the danger of hospital treatment has since been confirmed by Sir James Y. Simpson, who has shown from irrefragable statistics that the larger the hospitals and the higher the curative organization, the more fatal the results, as against the smaller hospitals and as against inferior home treatment. This course of research has been since carried out in Paris, where there is the highest curative organization, perhaps, of any in Europe, where the conclusion of their failure as increased sources of danger is so strong, as to occasion a demand for the suppression of the entire curative service of the large hospitals as an excessively expensive failure. This is set forth in a *mémoire* on the causes of pauperism and its remedies, by Monsieur Baron, an *avocat* in the Civil Service, crowned by the largest prize from our Academy of Moral and Political Science of the Institute. In the paper, he cites evidence incontestably proving that of one hundred wounded carried to the hospital, nearly thirty died by the hospital, who, if they had remained at home, would undoubtedly have recovered ; that the deaths in the hospital are as ten, whilst under home treatment by the *Société des Secours Mutuels* they are only as six ; that of those who escape, the mean duration of the recoveries in the hospital is thirty-six days, whilst of those treated at home it is only nineteen days. Why, it is asked, such failures ? Should such an excessively expensive organization be continued ? It is characteristic of the reactionary administration in France, that with such undisputed conclusions, the practice of sending cholera patients to the hospitals at Marseilles and Toulon should be maintained, where it apparently can only have been maintained to kill them. It is to be noted that curative service for our home army had always kept the beds of our army hospitals full, and never emptied them ; whilst the preventative or sanitary service, so far as it has been enabled, with an imperfect organization, has largely emptied them, some of them by about one-half. Sanitation has already emptied four thousand beds constructed on curative estimates for the home army."



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